

5 CLAIMS

1. A method of processing a video including football comprising:
 - (a) identifying a plurality of segments of said video based upon an event, wherein said event is characterized by a start time based upon when the ball is put into play and an end time based upon when the ball is considered out of play, where each of said segments includes a plurality of frames of said video; and
 - (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.
2. The method of claim 1 wherein said event is defined by the rules of football.
3. The method of claim 1 wherein said start time is temporally proximate a hike.
4. The method of claim 1 wherein said end time is temporally proximate a tackle of a player with the ball.
5. A method of processing a video including football comprising:
 - (a) identifying a plurality of segments of said video, where each of said segments includes a plurality of frames of said video, based upon a series of activities defined by the rules of football that could potentially result in at least one of:
 - (i) a score;
 - (ii) preventing a score;
 - (iii) advancing a team toward a score;
 - (iv) preventing advancing a team toward a score; and
 - (b) creating a summarization of said video by including said plurality of

- 5 segments, where said summarization includes fewer frames than said
video.
6. The method of claim 5 wherein said summarization of said plurality of
segments is in the same temporal order as said plurality of segments within
10 said video.
7. The method of claim 5 wherein said activities are determined based upon
the color characteristics of said video.
8. The method of claim 5 wherein said activities are determined based upon
15 scene changes.
9. A method of processing a video including football comprising:
 (a) identifying a plurality of segments of said video based upon
20 detecting a play of said football game, wherein said identifying
includes detecting the start of said play and detecting the end of said
play, where each of said segments includes a plurality of frames of
said video; and
 (b) creating a summarization of said video by including said plurality of
25 segments, where said summarization includes fewer frames than said
video.
10. The method of claim 9 wherein said detecting the end of said play is based
upon detecting said start of said play.
11. The method of claim 9 wherein said summarization identifies said plurality
30 of segments of said video.
12. The method of claim 9 wherein said summarization is a summarized video

- 5 comprising said plurality of segments excluding at least a portion of said video other than said plurality of segments.
13. The method of claim 9 wherein said start is temporally close to the hike of the ball.
- 10 14. The method of claim 9 wherein said end is temporally close to a tackle of a player with the ball.
- 15 15. A method of processing a video including football comprising:
 - 15 (a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon detecting at least one spatial region of a generally green color, where each of said segments includes a plurality of frames of said video; and
 - 20 (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.
- 25 16. The method of claim 15 further comprising said spatial region having a substantially straight border.
17. The method of claim 15 further comprising said spatial region having a pair of substantially parallel edges.
- 30 18. The method of claim 15 further comprising said spatial region being centrally located within said frame.
19. The method of claim 15 wherein said generally green color is modified during said processing of said video.

- 5 20. The method of claim 15 wherein said generally green color is calculated based on the video and has a smaller gamut than an initial generally green color from which said generally green color is calculated based upon.
- 10 21. A method of processing a video including football comprising:
 - (a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon detecting at least one spatial region of a generally brown color, where each of said segments includes a plurality of frames of said video; and
 - (b) creating a summarization of said video by including said plurality of
- 15 segments, where said summarization includes fewer frames than said video.
22. The method of claim 21 further comprising said spatial region having a substantially straight border.
- 20 23. The method of claim 21 further comprising said spatial region having a pair of substantially parallel edges.
- 25 24. The method of claim 21 further comprising said spatial region being centrally located within said frame.
25. The method of claim 21 wherein said generally brown color is modified during said processing of said video.
- 30 26. The method of claim 21 wherein said generally brown color is calculated based on the video and has a smaller gamut than an initial generally brown color from which said generally green color is calculated based upon.
27. A method of processing a video including football comprising:

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33. The method of claim 32 wherein said white lines are substantially parallel to

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one another.

34. The method of claim 32 wherein at least three of said white lines intersect at substantially the same location.

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35. The method of claim 32 wherein said white lines are on a generally green background.

36. The method of claim 32 wherein said white lines have a sufficient length.

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37. The method of claim 32 where said length is based upon the size of a generally green region of said video.

38. A method of processing a video including football comprising:

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(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying multiple spaced apart lines, wherein said lines contrast with the background, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

39. The method of claim 38 wherein said lines are generally white.

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40. The method of claim 38 wherein said background is generally green.

41. The method of claim 38 wherein said lines are substantially parallel to one another.

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(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying a plurality of lines on a background primarily of a generally green color, where each of said segments includes a plurality of frames of said video; and

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44. The method of claim 43 wherein at least three of said lines intersect at substantially the same location.

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45. The method of claim 42 wherein said generally green color is calibrated based upon said video.

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46. A method of processing a video including football comprising:

(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying a plurality of lines that converge to generally the same location, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

47. The method of claim 46 wherein said lines are generally white.

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48. The method of claim 46 wherein said lines are parallel in the image domain.

49. The method of claim 46 wherein said lines are generally white and the background of said lines is generally green.

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50. The method of claim 46 wherein said generally same location is outside of the field of said football.

51. The method of claim 46 wherein said generally same location is outside of said frame of said video.

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52. The method of claim 46 wherein said lines are identified on the same frame of said video.

53. A method of processing a video including football comprising:

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(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying the lack of significant motion in the image domain, where each of said segments includes a plurality of frames of said video; and

(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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54. The method of claim 53 wherein said start is further based upon identifying a generally green spatial region.

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55. A method of processing a video including football comprising:

(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying a zooming of said video followed by said video being free from

- 5 significant motion, where each of said segments includes a plurality of frames of said video; and
- (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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56. The method of claim 55 wherein said start is further based upon identifying a generally green spatial region.

57. A method of processing a video including football comprising:

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(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying at least one non-generally green region that is consistent with a model of at least one of a color and a texture of the players uniform in said football video, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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58. The method of claim 57 wherein said non-generally green region has a generally linear alignment.

59. The method of claim 57 wherein said generally linear arrangement includes at least two generally lines of non-generally green regions.

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60. A method of processing a video including football comprising:

(a) identifying a plurality of segments of said video, wherein said identifying for at least one of said segments includes detecting the start of said segment based upon processing of a first single frame of

(b) creating a summarization of said football video by including said plurality of segments, where said summarization includes fewer frames than said football video.

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(a) identifying a plurality of segments of said video, where each of said segments includes a plurality of frames of said video;

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(d) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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67. The method of claim 65 wherein said connecting results in a single segment that includes said identified plurality of segments together with the frames of said video between said identified plurality of segments.

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(a) identifying a plurality of segments of said video, where each of said segments includes a plurality of frames of said video;

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(c) based upon said identifying as a result of (b) removing said

- 5 identified segment from said summarization; and
 - (d) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.
- 10 69. The method of claim 68 wherein said connecting includes discarding the frames of said video between said identified plurality of segments.
 70. The method of claim 68 wherein said connecting results in a single segment that includes said identified plurality of segments together with the frames
 - 15 of said video between said identified plurality of segments.
 71. A method of processing a video including football comprising:
 - (a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying two
 - 20 generally aligned sets of non-generally green regions, where each of said segments includes a plurality of frames of said video; and
 - (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.
 - 25 72. The method of claim 71 wherein said non-generally green regions are on a background of generally green.
 73. The method of claim 71 further comprising identifying a plurality of white
 - 30 lines.
 74. A method of processing a video including football comprising:
 - (a) identifying a plurality of segments of said video wherein each of said segments includes a play of football;

- 5 (b) detecting a commercial within said video;
- (c) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video, where said plurality of segments of said video sufficiently temporally close to said commercial are free from being included
- 10 within said summarization.

75. A method of processing a video including football comprising:

- 15 (a) identifying a plurality of segments of said video wherein each of said segments includes a play of football, wherein said segments include full-speed plays and slow motion plays of said full-speed plays; and
- (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video, where a user may select from:
- 20 (i) said summarization including only full-speed plays;
- (ii) said summarization including only slow motion plays;
- (iii) said summarization including both full-speed plays and slow motion plays.

76. A method of processing a video including football comprising:

- (a) identifying a plurality of segments of said video wherein each of said segments includes a play of football;
- (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said
- 30 video; and
- (c) removing at least one of said segments from said summary based, at least in part, upon audio information related to said at least one of said segments.

- 5 77. The method of claim 76 wherein said audio information is obtained exclusively from a temporal analysis.
- 10 78. A method of processing a video including football comprising:
- (a) identifying a plurality of segments of said video wherein each of said segments includes a play of football;
 - (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video; and
 - (c) modifying the duration of at least one of said segments from said summary based, at least in part, upon audio information related to said at least one of said segments.
- 15 79. The method of claim 78 wherein said audio information is obtained exclusively from a temporal analysis.
- 20 80. A method of processing a video comprising:
- (a) providing a description of said video;
 - (b) identifying a plurality of segments of said video based upon said description;
 - (c) generating another video based upon said identified segments, wherein said another video has less frames than said video.
- 25 81. The method of claim 80 wherein said video is transcoded in accordance with the channel capacity of a transmission medium.
- 30 82. The method of claim 80 wherein said video is transcoded in accordance with the storage capacity of a storage device.
83. The method of claim 80 wherein said description is compliant with MPEG-

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7 standard.

84. The method of claim 80 wherein said description is compliant with TV-Anytime standard.

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85. A method of processing a video comprising:

- (a) a service provider identifying a summary of said video;
- (b) a service provider identifying a description of said summary; and
- (c) said service provider providing said summary and said description to a remote user in response to receiving a request from said remote user.

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86. The method of claim 85 wherein said user requests said summary with a browser.

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87. A method of processing a video comprising:

- (a) a service provider storing a summary of a video; and
- (b) said service provider providing said summary to a remote user in response to receiving a request from said remote user.

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88. The method of claim 87 wherein said user requests said summary with a browser.

89. A method of processing a video comprising:

- (a) a service provider storing a description of a summary of a video; and
- (b) said service provider providing said description to a remote user in response to receiving a request from said remote user.

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90. The method of claim 89 wherein said user requests said description with a browser.